

Claims

1. A tire cord adapted for the reinforcement of an elastomeric article, comprising:

5 a first group of filaments having a core filament number of from three to six core filaments and forming a helix along a longitudinal direction wherein said core filaments are not twisted together and said core filaments are arranged in a substantially parallel, substantially side-by-side configuration; and

10 a second group of filaments having a sheath filament number of from one to seven sheath filaments and forming a flattened helix in the same sense as said helix of said core filaments, said second group being twisted about said first group in the same sense as said helix of said core filaments;

wherein each of said core filaments and said sheath filaments contribute substantially to a breaking strength of said tire cord;

15 wherein each of said core filaments is characterized by a core filament diameter and each of said sheath filaments is characterized by a sheath filament diameter; and

wherein any cross section of said tire cord along said longitudinal direction is contained within a generally oval-shaped outer bound  
20 characterized by a major diameter along a major axis and a minor diameter along a minor axis.

2. The tire cord of claim 1 wherein said minor diameter is no greater than 60% of said major diameter.

25 3. The tire cord of claim 1 wherein said tire cord satisfies the equation:

$$1.5 \times d_c \leq (D_h - 2 \times d_s) \leq m \times d_c + d_s,$$

where

$d_c$  = said core filament diameter,

$D_h$  = said major diameter,

30  $d_s$  = said sheath filament diameter, and

$m$  = said core filament number.

4. The tire cord of claim 2 wherein said tire cord satisfies the equation:

$$1.5 \times d_c \leq (D_h - 2 \times d_s) \leq m \times d_c + d_s,$$

where

- 5  $d_c$  = said core filament diameter,  
 $D_h$  = said major diameter,  
 $d_s$  = said sheath filament diameter, and  
 $m$  = said core filament number.

10 5. The tire cord of claim 1, wherein said sheath filament diameter is substantially the same as said core filament diameter.

6. A tire cord adapted for the reinforcement of an elastomeric article, comprising:

15 a first group of filaments having a core filament number of from two to six core filaments and forming a helix along a longitudinal direction wherein said core filaments are not twisted together and said core filaments are arranged in a substantially parallel, substantially side-by-side configuration; and

20 a second group of filaments having a sheath filament number of from one to seven sheath filaments and forming a flattened helix in the same sense as said helix of said core filaments, said second group being twisted about said first group in the same sense as said helix of said core filaments;

wherein each of said core filaments and said sheath filaments contribute substantially to a breaking strength of said tire cord;

25 wherein each of said core filaments is characterized by a core filament diameter and each of said sheath filaments is characterized by a sheath filament diameter; and

30 wherein any cross section of said tire cord along said longitudinal direction is contained within a generally oval-shaped outer bound characterized by a major diameter along a major axis and a minor diameter along a minor axis, such that said minor diameter is no greater than 60% of said major diameter.

7. The tire cord of claim 6 wherein said tire cord satisfies the equation:

$$1.5 \times d_c \leq (D_h - 2 \times d_s) \leq m \times d_c + d_s,$$

where

- 5  $d_c$  = said core filament diameter,  
 $D_h$  = said major diameter,  
 $d_s$  = said sheath filament diameter, and  
 $m$  = said core filament number.

8. The tire cord of claim 6, wherein said sheath filament diameter is  
10 substantially the same as said core filament diameter.

9. A tire cord adapted for the reinforcement of an elastomeric article, comprising:

a first group of filaments having a core filament number of from two to six core filaments and forming a helix along a longitudinal direction wherein  
15 said core filaments are not twisted together and said core filaments are arranged in a substantially parallel, substantially side-by-side configuration; and

a second group of filaments having a sheath filament number of from one to seven sheath filaments and forming a flattened helix in the same sense  
20 as said helix of said core filaments, said second group being twisted about said first group in the same sense as said helix of said core filaments;

wherein each of said core filaments and said sheath filaments contribute substantially to a breaking strength of said tire cord;

wherein each of said core filaments is characterized by a core filament  
25 diameter and each of said sheath filaments is characterized by a sheath filament diameter satisfying the equation:

$$1.5 \times d_c \leq (D_h - 2 \times d_s) \leq m \times d_c + d_s,$$

where

- 30  $d_c$  = said core filament diameter,  
 $D_h$  = said major diameter,  
 $d_s$  = said sheath filament diameter, and  
 $m$  = said core filament number; and

wherein any cross section of said tire cord along said longitudinal direction is contained within a generally oval-shaped outer bound characterized by a major diameter along a major axis and a minor diameter along a minor axis, such that said minor diameter is no greater than 60% of said major diameter.

5        10.    The tire cord of claim 9, wherein said sheath filament diameter is substantially the same as said core filament diameter.

10       11.    The tire cord of claim 1, where said sheath filaments are characterized by a first pitch forming said flattened helix and a second pitch smaller than said first pitch.

12.    The tire cord of claim 6, where said sheath filaments are characterized by a first pitch forming said flattened helix and a second pitch smaller than said first pitch.

15       13.    The tire cord of claim 9, where said sheath filaments are characterized by a first pitch forming said flattened helix and a second pitch smaller than said first pitch.